

**REMARKS**

In view of the above amendments and the following remarks, favorable reconsideration of the outstanding office action is respectfully requested.

By virtue of the claim amendments presented supra, claims 1-5 and 12-14 remain unchanged in the application. Claims 6-11 are canceled without prejudice in response to a restriction requirement. Claims 1-5 were withdrawn from examination by the Examiner under a restriction requirement. New claims 15-17 are added.

**1. Restriction Requirement**

The Examiner issued a Restriction Requirement identifying the following groups of claims as being drawn to potentially distinct inventions:

- Group I.      Claims 1-5, drawn to glass composition, classified in class 501, subclass 69;
- Group II.     Claims 6-11, drawn to method of manufacturing a glass ceramic, classified in class 65, subclass 33.8; and
- Group III.    Claims 12-14, drawn to a glass ceramic, classified in class 501, subclass 4.

In the Detailed Action, the Examiner asserted:

Inventions I and II are related as mutually exclusive species in an intermediate-final product relationship. Distinctiveness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP §806.04(b), 3<sup>rd</sup> paragraph), and the species are patentably distinct (MPEP §806.04(h)). In the instant case, the intermediate product is deemed to be useful as a glass coating composition and the inventions are deemed to be useful as a glass coating composition and the inventions are deemed patentably distinct there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by prior art, the evidence or admissions may be used in a rejection under 35 U.S.C. 103 (a) of the other invention.

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be practiced with a materially different process of using that product(MPEP §806.05(h)). In the instant case the product may be used in a coating process which does not involve crystallization.

Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP §806.05(f)). In the instant case the product may be made by a sol-gel process.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant hereby confirm, in writing, the provisional election of Group III invention for further examination, with partial traverse to the restriction requirement.

Applicant submits that Group I and III inventions are obvious over each other. Therefore, they are not patentably distinct. Accordingly, the restriction between them is not proper.

Applicant has canceled claims directed to Group II inventions, namely, process claims 6-11, without prejudice, in response to the restriction between Groups I/II and Groups II/III inventions.

Applicant respectfully requests the Examiner to withdraw the restriction between Groups I/III inventions, and proceed to examiner all claims directed to them, including claims 1-5 and 12-17, in the next Office action.

## 2. Rejections under 35 U.S.C. § 112

The Examiner has also rejected claims 12-14, under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, the Examiner asserted that “[c]laim 12 requires a maximum amount of ZrO<sub>2</sub> to be 2.5 which combined with the maximum of TiO<sub>2</sub> being 3.5 makes the ratio of TiO<sub>2</sub>/ZrO<sub>2</sub> ratio of greater than 2.2 unattainable. The meets and bound of the claims cannot be determined since it is not clear if the ranges of the components are required or not.”

Applicant respectfully traverse this rejection.

Applicant submits that all claims limitation should be read in light of each other when interpreting the meets and bounds of a claim. Claim 12 defines the amounts of TiO<sub>2</sub>, ZrO<sub>2</sub> in the composition of the glass-ceramic as meeting three conditions:

TiO<sub>2</sub> 1.8 - 3.5

$ZrO_2$  0.8 - 2.5

with  $2.2 < \frac{TiO_2}{ZrO_2} < 4.5$ .

One of ordinary skill in the art can determine which compositions fall inside and outside of these limitations. One of ordinary skill in the art can easily calculate the permitted range of  $ZrO_2$  amount in the composition for any given amount of  $TiO_2$  in the composition and vice versa. Therefore, the meets and bounds of the invention in terms of the amounts of  $TiO_2$  and  $ZrO_2$  are clearly defined in this claim. Whether under all these conditions  $ZrO_2$  can attain the stated maximum of 4.5 is irrelevant.

### 3. Rejections under 35 U.S.C. §§ 102 and 103

#### 3.1 *The rejection over Vilato et al.*

The Examiner has rejected claims 12-14 under 35 U.S.C. § 102 (a or e) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Vilato et al. (United States Patent No. 6,528,440).

Applicant respectfully traverses this rejection.

A single glass-ceramic composition as disclosed in Vilato et al. is:  $SiO_2$ : 69.05;  $Al_2O_3$ : 18.90;  $Li_2O$ : 3.3;  $MgO$ : 0.9;  $ZnO$ : 1.55;  $BaO$ : 0.75;  $K_2O$ : 0.1;  $TiO_2$ : 2.6;  $ZrO_2$ : 1.75;  $As_2O_3$ : 0.9;  $Na_2O$ : 0.2.

This composition clearly falls outside of the claimed scope of claim 12 of the present application in that the  $TiO_2/ZrO_2$  in this composition is merely 1.5, whereas claim 12 requires that  $TiO_2/ZrO_2 > 2.2$ .

The Examiner further noted that Vilato et al. discloses that the glass-ceramic may comprise  $SiO_2$ ,  $Al_2O_3$  and  $Li_2O$  in the following range:  $SiO_2$ :63-70;  $Al_2O_3$ : 18-22; and  $Li_2O$ : 2.5-4.5.

However, Applicant submits that nowhere in Vilato et al. teaches or suggests that the glass-ceramic has  $TiO_2/ZrO_2$  ratio between 2.5 and 4.5.

The Examiner further asserted that the composition range taught in Vilato et al. overlaps with the claimed composition range of claim 12. We respectfully disagree. When interpreting a claim, all claim limitations must be considered as a whole. Whereas Vilato et al. teaches the range of  $SiO_2$ ,  $Al_2O_3$  and  $Li_2O$ , it does not teach the range of  $ZrO_2$ ,  $TiO_2$  or the ratio of  $TiO_2/ZrO_2$ . It does not explicitly teach the ranges of many other components, such as  $MgO$ ,  $ZnO$ ,  $K_2O$ ,  $BaO$ ,  $SrO$ , etc. At best, Vilato et al. constitutes a background art. To say that claim 12 is anticipated by Vilato et al. because of the overlap between  $SiO_2$ ,  $Al_2O_3$  and

$\text{Li}_2\text{O}$  is equal to say that any patent or patent application claiming a specific  $\text{Al}_2\text{O}_3\text{-SiO}_2\text{-Li}_2\text{O}$  glass-ceramic is anticipated by any reference mentioning lithium aluminosilicate glass-ceramic material in general without specifying a range of  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$  or  $\text{Li}_2\text{O}$ , as there is necessarily overlap in terms of  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$  and  $\text{Li}_2\text{O}$  amount. The latter is certainly not the current practice of the USPTO and is contrary to the law.

In a rejection under 35 U.S.C. § 103, a prima facie case of obviousness must be established over the cited prior art.

A proper prima facie case of obviousness requires the examiner to satisfy three requirements. First, the prior art relied upon, coupled with knowledge generally available to one of ordinary skill in the art, must contain some suggestion which would have motivated one of ordinary skill to combine references. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the examiner must show that, at the time the invention was made, the proposed modification had a reasonable expectation of success. See Amgen v. Chugai Pharm. Co., 927 F.2d 1200, 1209, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991). Finally, the combination of references must teach or suggest each and every limitation of the claimed invention. See In re Wilson, 424 F.2d 1832, 1385, 165 USPQ 494, 496 (CCPA 1970). Moreover, both the suggestion and the reasonable expectation of success must be found in the prior art, not in the applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re Fritch, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992).

Clearly, Vilato et al. does not teach or suggest the limitation  $2.5 < \text{TiO}_2/\text{ZrO}_2 < 4.5$ . Therefore, a prima facie case of obviousness is not established.

Even assuming, arguendo, that Vilato et al. could have established a prima facie case of obviousness of claim 12, which it does not as indicated supra, such case of obviousness is nonetheless rebutted for the following reasons.

As detailed in the specification of the present application, with the limitation  $2.2 < \text{TiO}_2/\text{ZrO}_2 < 4.5$ , the precursor glass composition of the glass-ceramic material has a higher liquidus viscosity, which lends superior processing properties to the precursor glass of the glass-ceramic material (claimed in claim 1), hence the glass-ceramic materials per se, claimed in claim 12.

Claims 12-17 are dependent from claim 12. Thus they are not anticipated or obvious over Vilato *et al.* for the same reasons.

**3.2     *The rejection over Comte et al.***

The Examiner has rejected claims 12-14 under 35 U.S.C. 102(b) as anticipated by or, in the alternative under 35 U.S.C. 103(a) as obvious over Comte *et al.* (United States Patent No. 5,070,045).

Applicant respectfully traverses this rejection.

Comte *et al.* was discussed in the specification of the present application in connection with the prior art. It is clear that Comte *et al.* does not teach or suggest the limitation of  $2.2 < \text{TiO}_2/\text{ZrO}_2 < 4.5$  as required in claim 12 of the present application. Therefore, Comte *et al.* does not anticipate claim 12, nor does it establish a *prima facie* obviousness case of claim 12.

Even assuming, *arguendo*, that Comte *et al.* could have established a *prima facie* case of obviousness of claim 12, which it does not as indicated *supra*, such case of obviousness is nonetheless rebutted for the following reasons.

As detailed in the specification of the present application, with the limitation  $2.2 < \text{TiO}_2/\text{ZrO}_2 < 4.5$ , the precursor glass composition of the glass-ceramic material has a higher liquidus viscosity, which lends superior processing properties to the precursor glass of the glass-ceramic material (claimed in claim 1), hence the glass-ceramic materials *per se*, claimed in claim 12.

Therefore, Applicant respectfully requests the Examiner to withdraw the rejections under 35 U.S.C. §§ 102 and 103.

**4.     Conclusion**

Based upon the above amendments, remarks, and papers of record, Applicant believes claims 12-14 of the above-captioned application are in allowable form and patentable over the prior art of record. Applicant respectfully requests reconsideration of the pending claims 12-14 and a prompt Notice of Allowance thereon. Further, Applicant requests the Examiner to reconsider the restriction requirement, withdraw the restriction requirement and proceed to examine claims 1-5 in the next Office action.

Applicant believes that no extension of time is necessary to make this Response timely. Should Applicant be in error, Applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Response timely, and hereby authorizes the Office to charge any necessary fee or surcharge with

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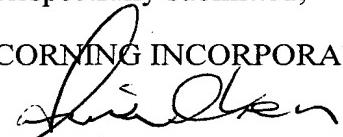
respect to said time extension to the deposit account of the undersigned firm of attorneys,  
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The undersigned attorney is granted limited recognition by the Office of Discipline  
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Please direct any questions or comments to the undersigned at (607) 248-1253.

Respectfully submitted,

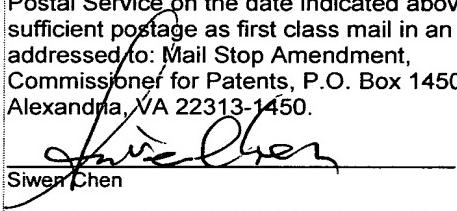
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